Safe Maneuvering Guidelines T-ORE at Terminal 1 of Açu Port

Version 1.3 - 2024

FOR INFORMATION

INTRODUCTION

- This document is for informational purposes only and aims to present general information about Terminal 1 of the Port of Açu.

- This document should be understood as a recommendation to support the “Passage Planning” preparation during inbound and outbound maneuvers the port, as described in Rule 34, Chapter V of SOLAS.

- This document should not be understood as an "Instruction Manual" or "Regulatory Guidance", It does not exempt the captain from using all due diligence, knowledge and good practices during passage planning, but it is a reference to assist the team involved in ship maneuvers with information about the Port of Açu.

- The Captain, assisted by the Pilot, is responsible for the safety of the vessel under his command during all phases of the maneuvers, so the information described in this documment must be considered as information, subject to adjustments according to the specific conditions and operational circumstances encountered during each maneuver.

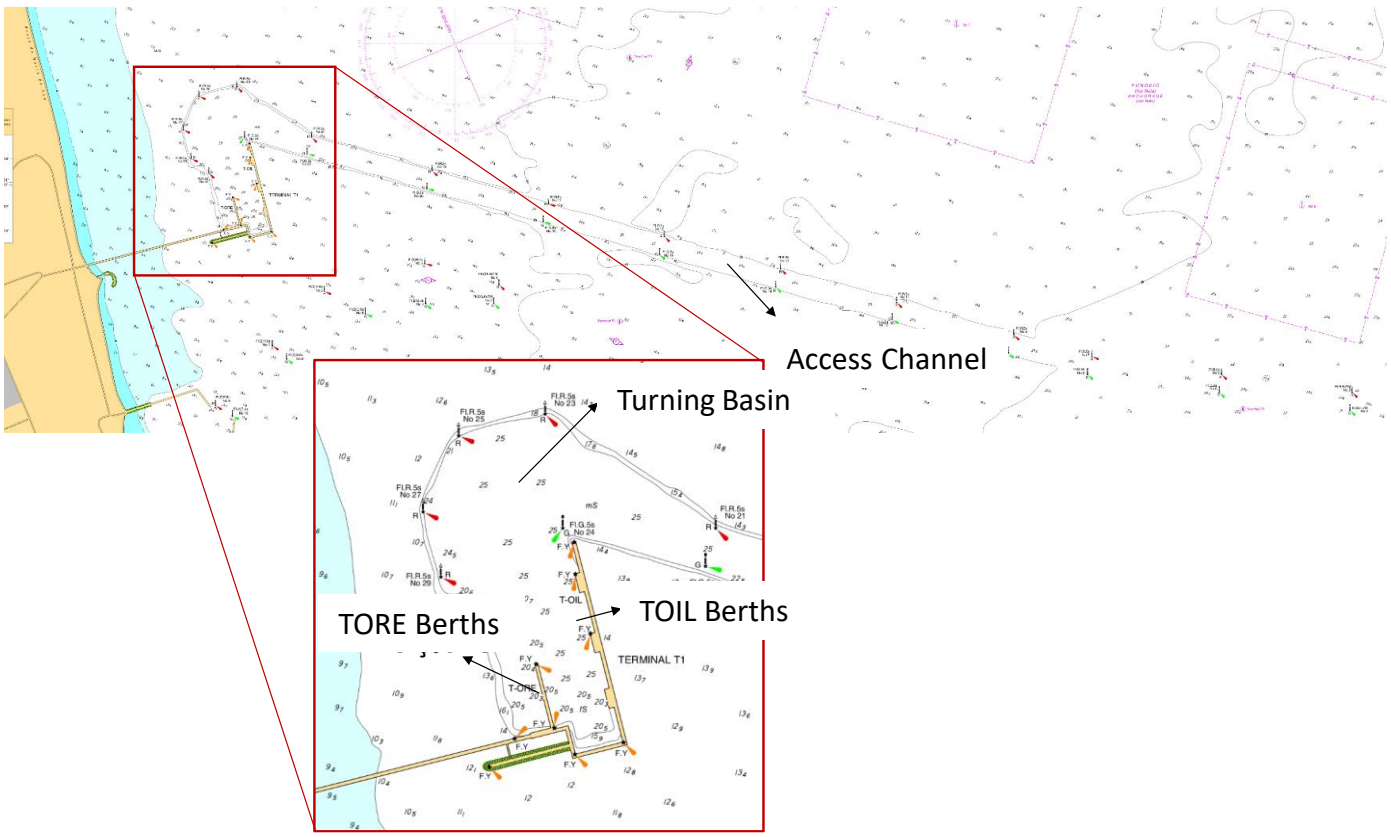
- Any anomaly, deficiency or limitation of the vessel, whether in the steering, navigation equipment, machinery or mooring must be reported to the Terminal Administration, the Maritime Authority, Açu VTS and the Pilot before the start of the maneuvers or as soon as identified during the maneuver.

OBJECTIVE

- To provide information for captains of the vessels visiting Terminal 1 of Açu Port regarding maneuvering procedures, risks and points of attention during arrival and departure maneuvers.

GENERAL LAYOUT

- Terminal 1 characteristics are:
  - One one-way access channel.
  - One turning basin.
  - Berths:
    - TOIL: 3 berths (North, Central and South).
    - TORE: 2 berths (East e West).



DESIGN VESSELS

- The largest vessels allowed at the berths of Terminal 1 are:

TOIL-North and Central

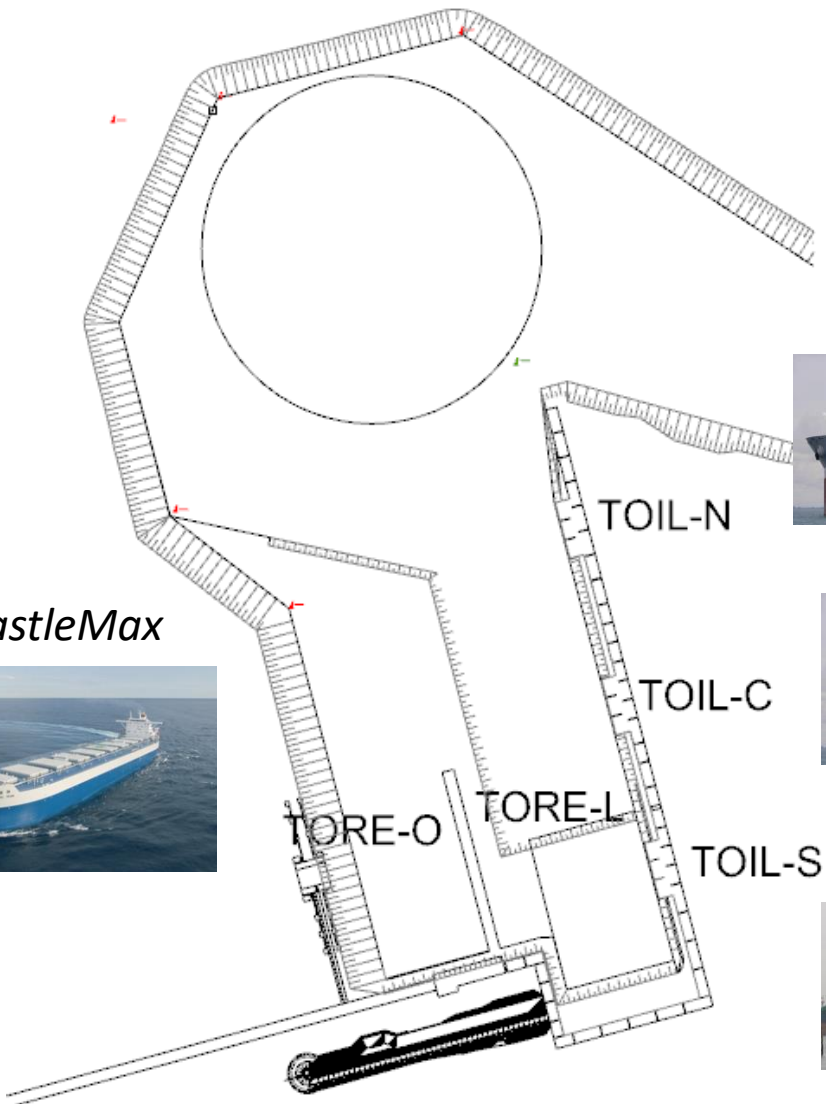
- VLCC (LOA<=340, Breadth<=60.1m).

TOIL-South

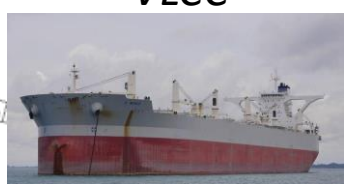
- Suezmax (LOA<=280, Breadth<=50.0m).

TORE-East/West

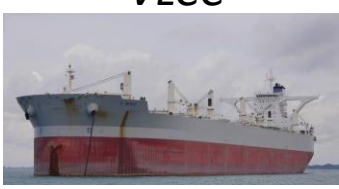
- NewcastleMax (LOA<=300, Breadth<=50m).



VLCC



VLCC

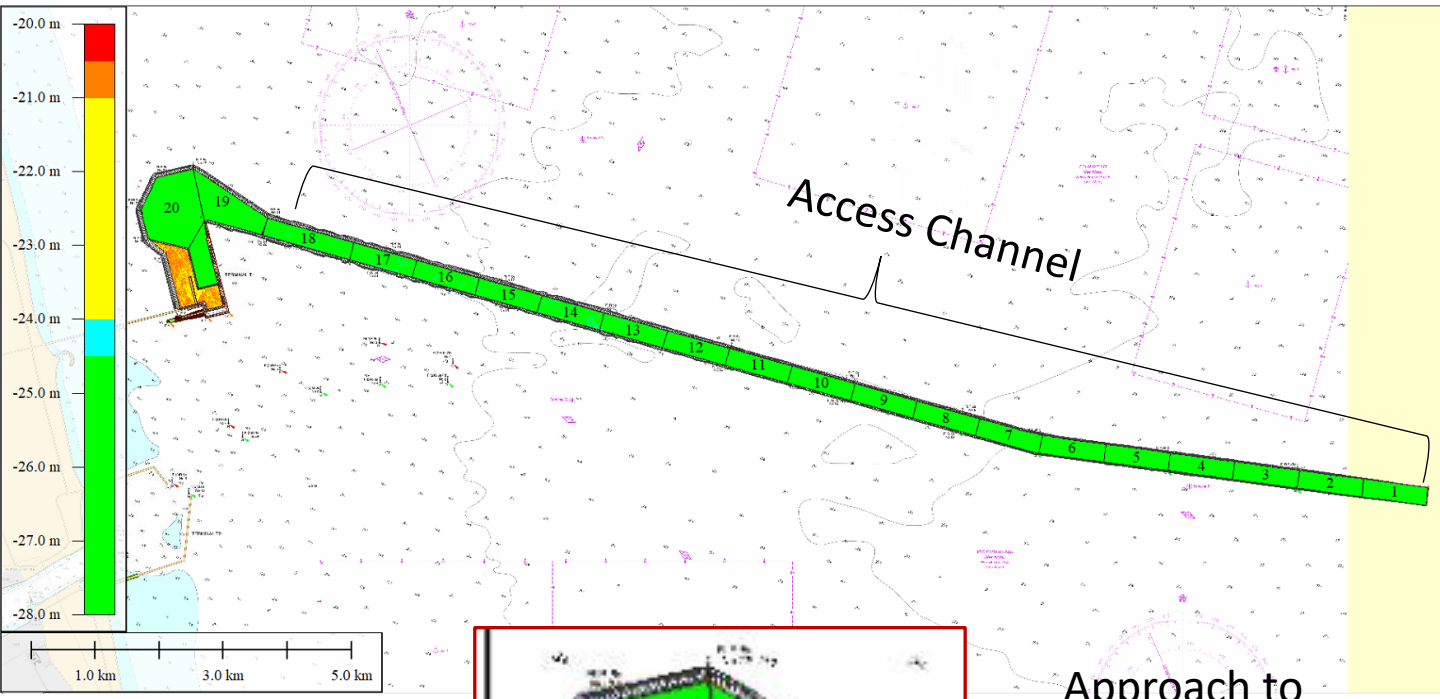


NewcastleMax

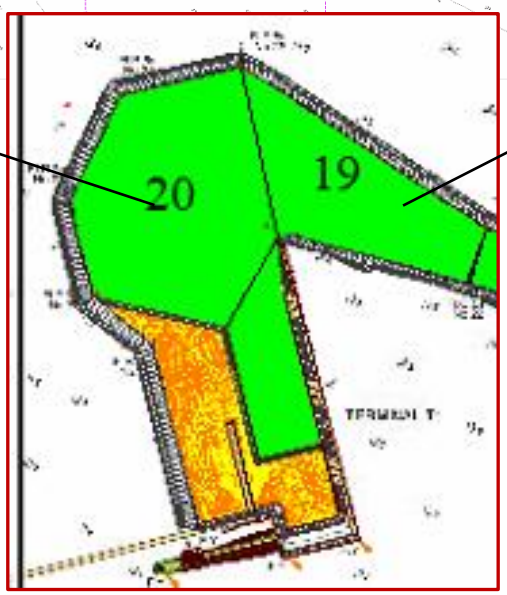
Suezmax

METOCEAN CONDITIONS

- The metocean conditions that most affect vessels:
  - At the access channel (1-18): waves, winds and currents.
  - At the basin approach zone (19): winds and currents.
  - At the turning basin (20): winds.
  - At the the approach channel and berths: winds.



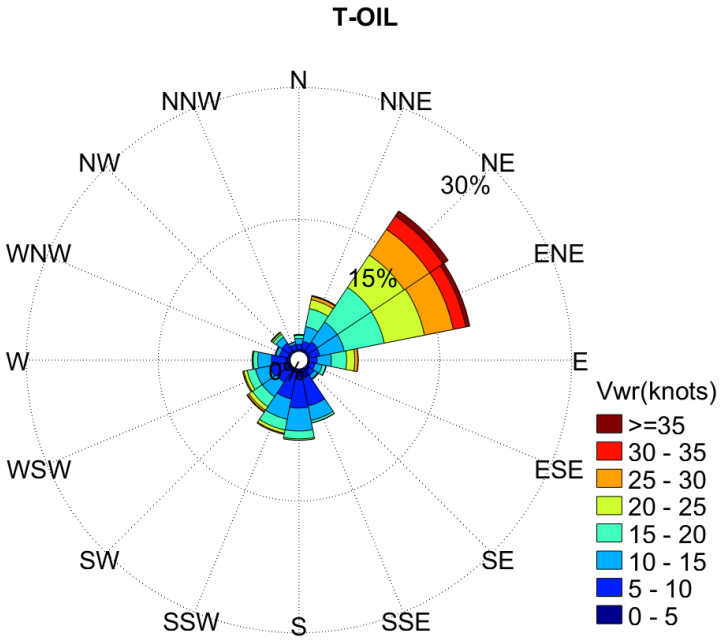
Turning Basin



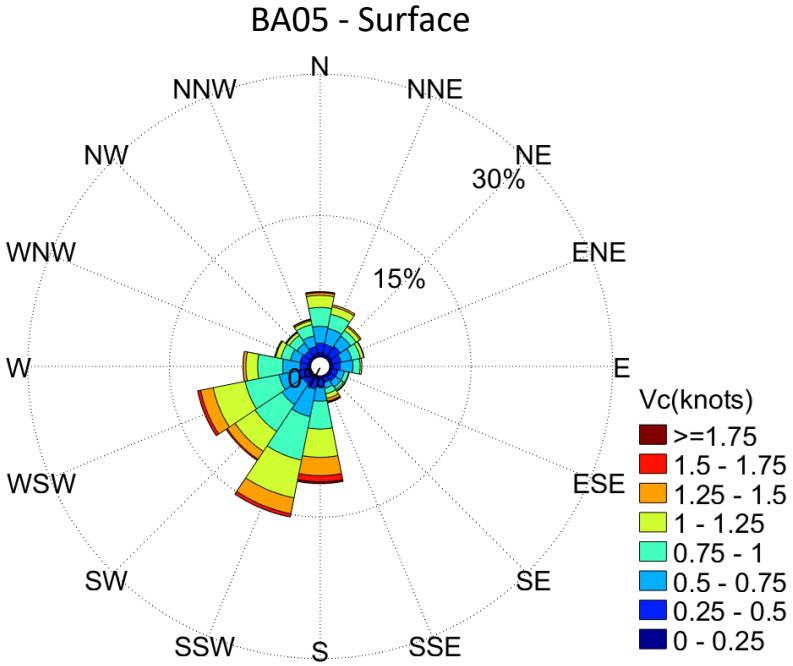
Approach to the Basin

METOCEAN CONDITIONS

- Predominant NE winds, with some inversions to SW in cold front situations. Extreme winds can exceed 35 knots.



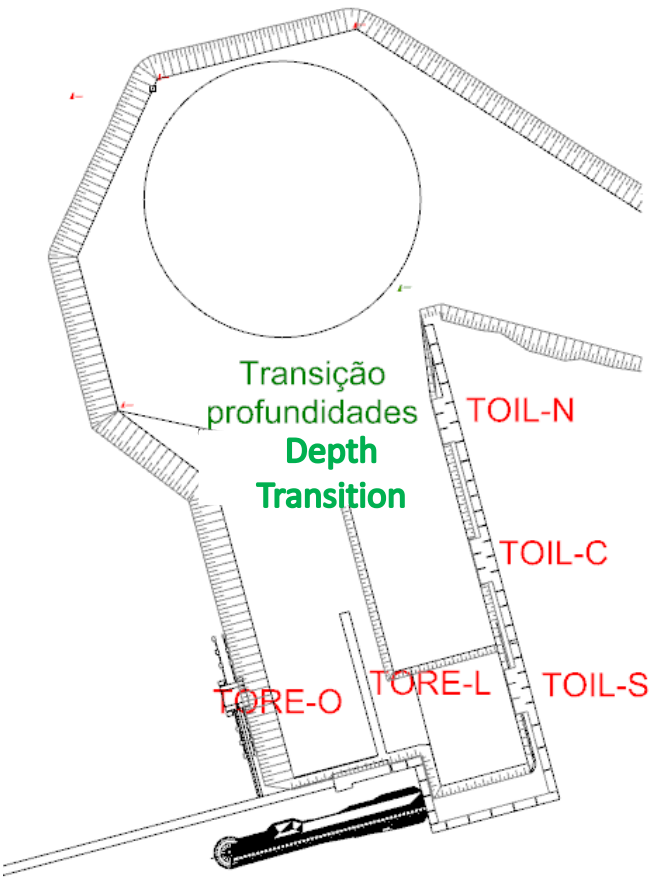
- Predominant SW currents, with inversions to NE. Extreme currents at buoy BA05 can reach up to 1.8 knots.

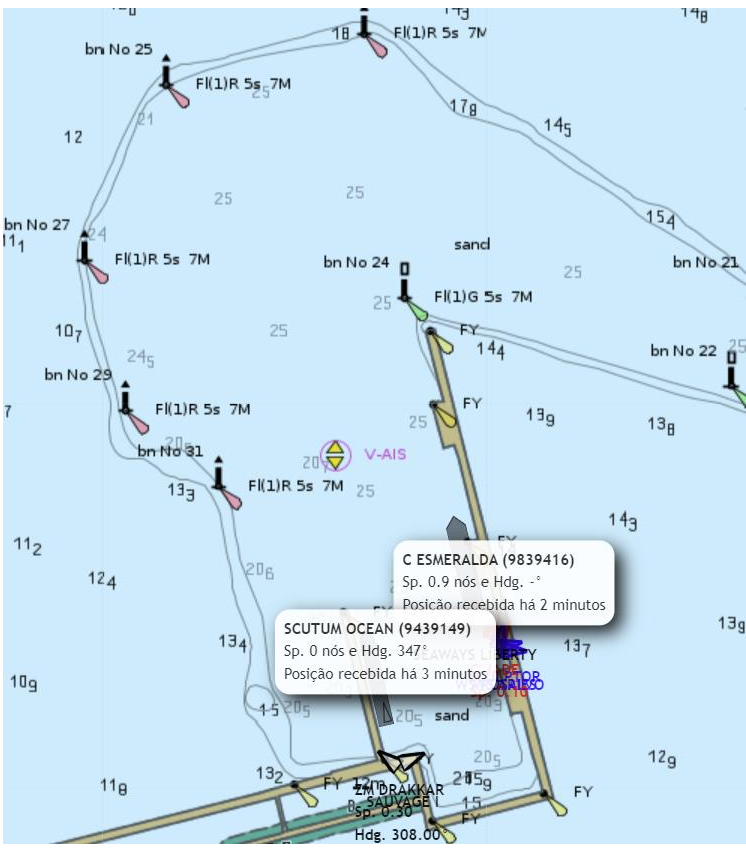


RISKS TO NAVIGATION

Main risks to navigation:

- Fisher boats and small vessels in navigation areas.
- Reduced depths out of the charted navigation channel.
- Potentially adverse weather conditions.
- Reduced distance between the vessels' sides during berthing and unberthing.
- Loaded VLCCs at the central berth: risk due to depth transition (vitually marked zone – AIS AToN).



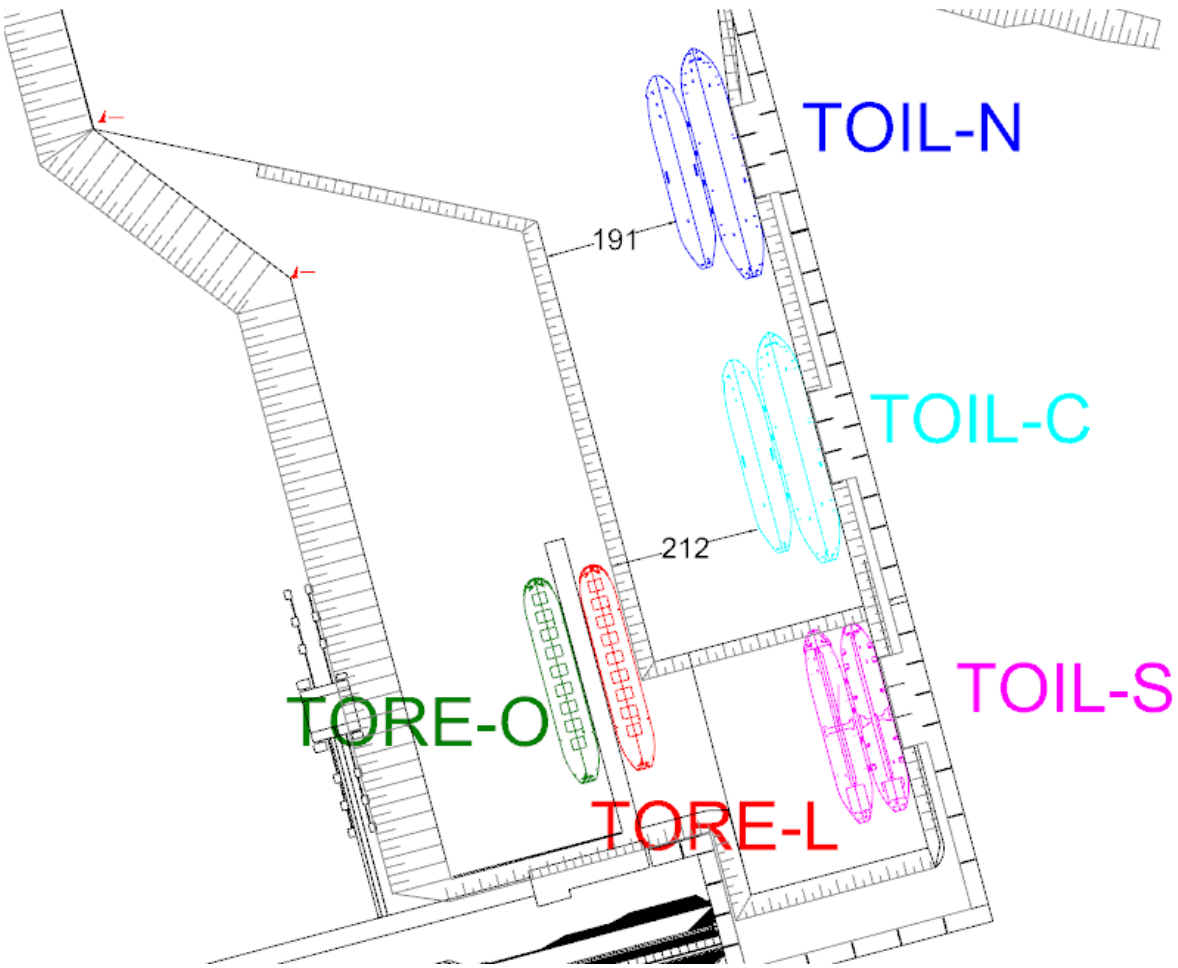


FOR INFORMATION

RISKS TO NAVIGATION

When the TOIL and TORE berths are occupied, especially during STS operations:

- Attention at TOIL-South when there is an operation at the central berth and ships berthed at TORE-East.
- Attention on the unberthing of loaded VLCC from the central berth when there are STS operations at the north berth.
- Maximum speed of 3 knots.
- Try avoiding distances of less than 50 meters between ship's sides to mitigate passing ship effects.



AIDS AND MITIGATION RESOURCES

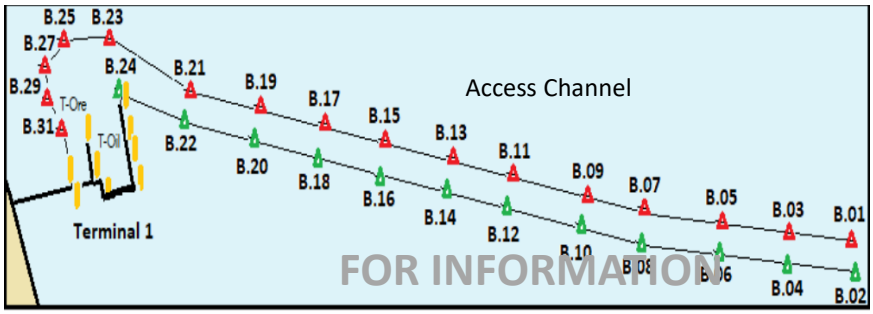
Açu Port features the following resources:

- VTS (Vessel Traffic System): provides traffic information for the access channel, turning basin, approach channel (available 24/7).
- Lighted buoys: articulated buoys to outline navigable areas.
- Metoceanographic monitoring sensors: wind, wave, current, tide, visibility, etc.
- Metocean forecast system: expected metocean conditions for the following days.
- Local Pilots available 24/7 to support the maneuvers.

AIDS TO NAVIGATION

- Articulated buoys with AIS whose coordinates and characteristics are listed in the Brazilian Navy's lighthouse registry and T1 Port Information (Datum WGS84):

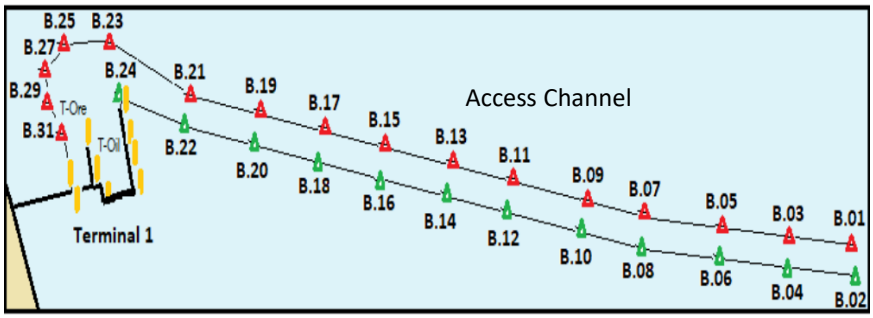
SEMISUBMERSIBLE ARTICULATED BUOYS (SAB)							
BUOYS	TOPMARK COLOR	COORDINATES				LUMINOUS SIGN	DETAILED PHASE
		UTM		GEOGRAPHIC			
		EAST (m)	WEST (m)	LATITUDE	LONGITUDE		
BA T1 01	CRIMSON	314342,6	7584296,6	21° 50' 07,84399"	040° 47' 46,91034"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 02	GREEN	314309,3	7584026,2	21° 50' 16,62180"	040° 47' 48,17933"	Lp. V. 5s	V. 0,5 – Ecl. 4,5
BA T1 03	CRIMSON	312316,5	7584548,9	21° 49' 58,86822"	040° 48' 57,35292"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 04	GREEN	312276,5	7584274,2	21° 50' 07,78398"	040° 48' 58,85987"	Lp. V. 5s	V. 0,5 – Ecl. 4,5
BA T1 05	CRIMSON	310287,3	7584802,8	21° 49' 49,83395"	040° 50' 07,90250"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 06	GREEN	310246,8	7584518,4	21° 49' 59,06330"	040° 50' 09,43064"	Lp. V. 5s	V. 0,5 – Ecl. 4,5
BA T1 07	CRIMSON	308287,1	7585057,3	21° 49' 40,78041"	040° 51' 17,43621"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 08	GREEN	308215,6	7584774,4	21° 49' 49,94992"	040° 51' 20,04216"	Lp. V. 5s	V. 0,5 – Ecl. 4,5
BA T1 09	CRIMSON	307091,9	7585372,9	21° 49' 30,05165"	040° 51' 58,91559"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 10	GREEN	306997,4	7585094,1	21° 49' 39,07858"	040° 52' 02,32158"	Lp. V. 5s	V. 0,5 – Ecl. 4,5
BA T1 11	CRIMSON	305255,4	7585848,8	21° 49' 13,85662"	040° 53' 02,64997"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 12	GREEN	305195,2	7585588,1	21° 49' 22,30803"	040° 53' 04,85785"	Lp. V. 5s	V. 0,5 – Ecl. 4,5
BA T1 13	CRIMSON	303466,1	7586340,3	21° 48' 57,16488"	040° 54' 04,73170"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 14	GREEN	303391,2	7586058,4	21° 49' 06,29731"	040° 54' 07,45992"	Lp. V. 5s	V. 0,5 – Ecl. 4,5
BA T1 15	CRIMSON	301662,3	7586820,5	21° 48' 40,82708"	040° 55' 07,31962"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 16	GREEN	301589,4	7586556,8	21° 48' 49,36967"	040° 55' 09,96923"	Lp. V. 5s	V. 0,5 – Ecl. 4,5
BA T1 17	CRIMSON	299862,9	7587295,7	21° 48' 24,64796"	040° 56' 09,75072"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 18	GREEN	299790,0	7587031,2	21° 48' 33,21781"	040° 56' 12,40334"	Lp. V. 5s	V. 0,5 – Ecl. 4,5
BA T1 19	CRIMSON	298064,3	7587794,1	21° 48' 07,71039"	040° 57' 12,13796"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 20	GREEN	297987,7	7587512,0	21° 48' 16,84852"	040° 57' 14,92836"	Lp. V. 5s	V. 0,5 – Ecl. 4,5
BA T1 21	CRIMSON	296202,5	7588289,9	21° 47' 50,82415"	040° 58' 16,72294"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 22	GREEN	296132,2	7588016,8	21° 47' 59,67360"	040° 58' 19,29072"	Lp. V. 5s	V. 0,5 – Ecl. 4,5
BA T1 23	CRIMSON	295021,1	7589045,1	21° 47' 25,78491"	040° 58' 57,50597"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 24	GREEN	295157,1	7588271,5	21° 47' 50,98810"	040° 58' 53,12010"	Lp. V. 5s	V. 0,5 – Ecl. 4,5
BA T1 25	CRIMSON	294449,4	7588886,5	21° 47' 30,69954"	040° 59' 17,47425"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 27	CRIMSON	294220,2	7588376,6	21° 47' 47,17672"	040° 59' 25,68228"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 29	CRIMSON	294342,3	7587938,5	21° 48' 01,46927"	040° 59' 21,62741"	Lp. E. 5s	E. 0,5 – Ecl. 4,5
BA T1 31	CRIMSON	294625,1	7587714,7	21° 48' 08,86479"	040° 59' 11,88469"	Lp. E. 5s	E. 0,5 – Ecl. 4,5



AIDS TO NAVIGATION

- Navigational lights whose coordinates and characteristics are listed in the Brazilian Navy's lighthouse registry and T1 Port Information (Datum WGS84):

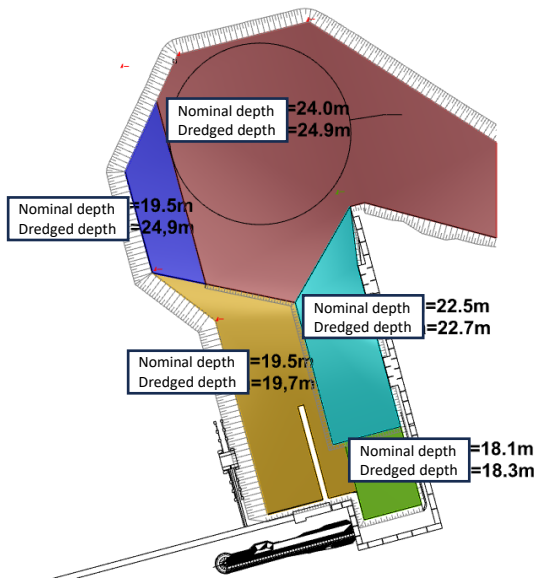
FAROLETES							
BUOYS	TOPMARK COLOR	COORDINATES				LUMINOUS SIGN	DETAILED PHASE
		UTM		GEOGRAPHIC			
		EAST (m)	WEST (m)	LATITUDE	LONGITUDE		
Fte T1 01	YELLOW	294858,7	7586839,7	21°48,62'	40°59,07'	Fl. (4) A 10s	A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 5,0
Fte T1 02	YELLOW	295128,7	7586886,1	21°48,60'	40°58,91'	Fl. (4) A 10s	A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 5,0
Fte T1 03	YELLOW	294997,8	7587342,5	21°48,35'	40°58,98'	Fl. (4) A 10s	A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 5,0
Fte T1 04	YELLOW	294666,4	7586657,2	21°48,72'	40°59,18'	Fl. (4) A 10s	A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 5,0
Fte T1 05	YELLOW	295255,7	7586710,0	21°48,70'	40°58,84'	Fl. (4) A 10s	A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 5,0
Fte T1 06	YELLOW	295617,1	7586806,5	21°48,65'	40°58,63'	Fl. (4) A 10s	A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 5,0
Fte T1 07	YELLOW	295241,3	7588175,4	21°47,90'	40°58,84'	Fl. (4) A 10s	A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 5,0
Fte T1 08	YELLOW	295253,2	7587960,0	21°48.02'	40°58,83'	Fl. (4) A 10s	A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 5,0
Fte T1 09	YELLOW	295361,8	7587554,7	21°48,24'	40°58,77'	Fl. (4) A 10s	A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 1,0 – A. 0,5 – Ecl. 5,0



FOR INFORMATION

DEPTHS OF THE WATERWAY

- Nominal channel depth:
  - Access channel:
    - Buoys 01 to 03: 24.2m (nominal)
    - Buoy 03 to the turning basin: 24.0m (nominal)
  - Turning basin and berths:



- Inbound and outbound maneuvers must use the charted access channel but when established by the Port Authority under Brazilian Navy supervision.

- Vessels navigating outside the designated navigation channel while loaded will be contacted for clarification.

- Depths represented out of the mentioned áreas of this documment may be outdated and/or inaccurate.

- When applicable, navigation outside the navigable route should be planned by the captain by an adequate “passage plan”, with the captain being sole responsible in the event of incidents/accidents.

REFERENCE SPEEDS

- The reference speed in the navigation channel is between 6 and 10 knots.

- In maneuvering areas speed may be reduced according to maneuver difficulty and specific risks identified.

- The VTS Center monitors vessel activity and may request clarification if vessel activities represents risk to navigation.

REFERENCE ROUTES

The following sections show reference trajectories for maneuvers at the terminal, and adjustments or modifications may be performed by the Captain with the assistance of the Pilot of the maneuver according to the conditions of the vessel, possible restrictions and/or environmental conditions acting during the maneuver, and may significantly differ from what is presented in the following sections.

Any anomaly, deficiency or limitation of the vessel, whether in the steering means, navigation equipment, machinery or mooring must be reported to the Terminal Administration, the Maritime Authority and the Pilot before the beginning of the maneuvers or as soon as identified during the maneuver.

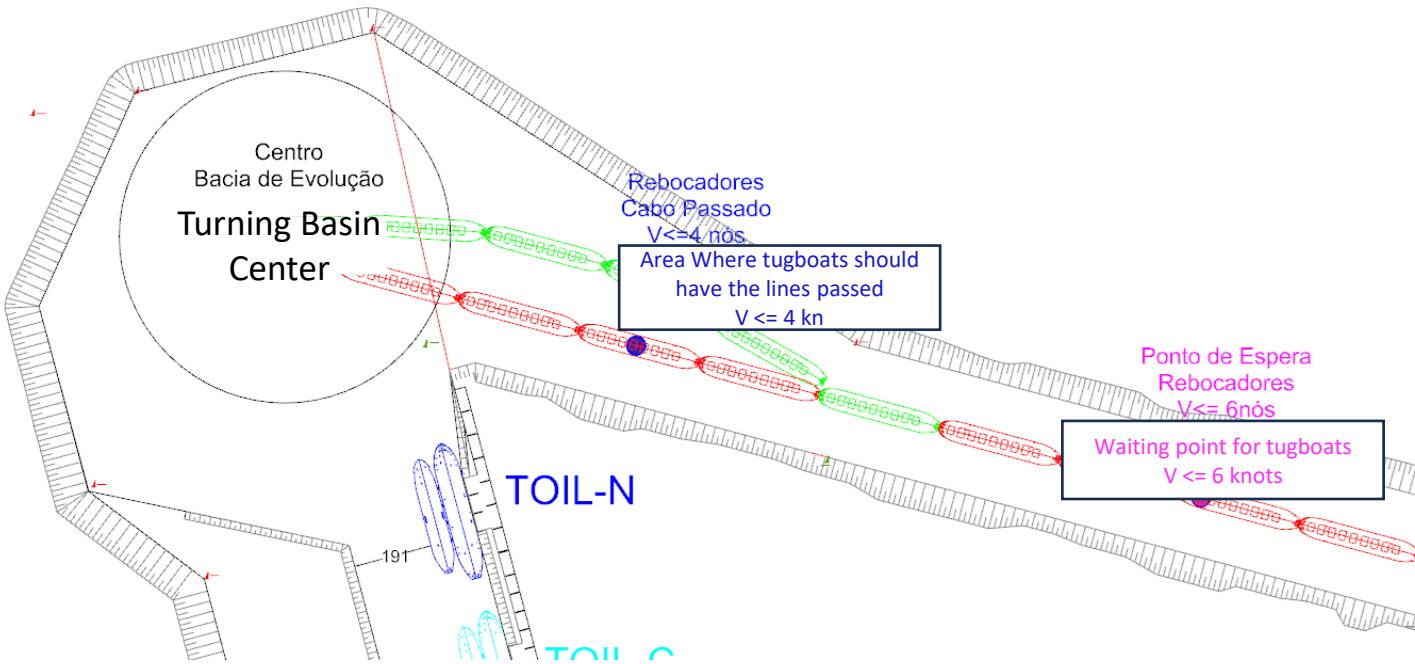
ARRIVAL MANEUVERS

REFERENCE TRAJECTORIES

- Utilize the turning basin for procedures of stopping and turning the vessel.
- The turning basin has a diameter of 800m and its center is offset from the axis of the navigation channel.
- Vessels may opt for a navigation oriented to the north of the transition between the channel and basin, compensating for the wind drift (green trajectory).

SPEEDS AND POINTS OF ATTENTION

- At the waiting point and start of the tug line passing area, speed may be kept up to 6 knots (magenta location), and at the point where tugboats should have the lines passed, speed may be kept at up to 4 knots (blue point).
- The coordinates of the reference points are:
  - Center of the turning basin (21° 47.720’ S,40° 59.093’ W)
  - Waiting point for tugboats (21° 47.859’ S,40° 58.573’ W)
  - Point where tugboats should have the lines passed (21° 48.069’ S,40° 57.818’ W)



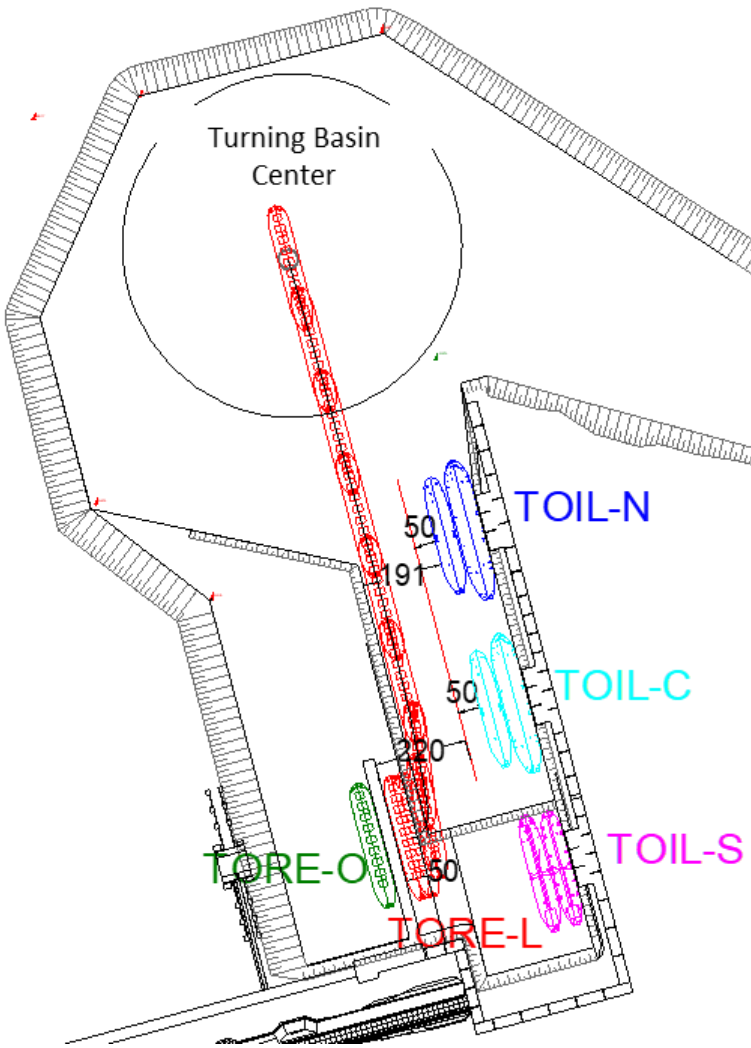
BERTHING AT T-ORE EAST

REFERENCE TRAJECTORIES

- Following the turn in the turning basin, the ship may approach the berth going astern with an inital heading below 350°.
- Maintain distance of at least 50m between the sides of the passing ship and the moored vessel.
- The vessel should approach to about one breadth of distance between the ship side to the berth and have the heading and approach speed adjusted precisely.

SPEEDS AND POINTS OF ATTENTION

- Recommended speed below 3 knots during the maneuver to reduce the passing ship effects when close to other vessels.
- Action of tugboats tend to be more intense during berthing and when controlling the passage through TOIL-N.



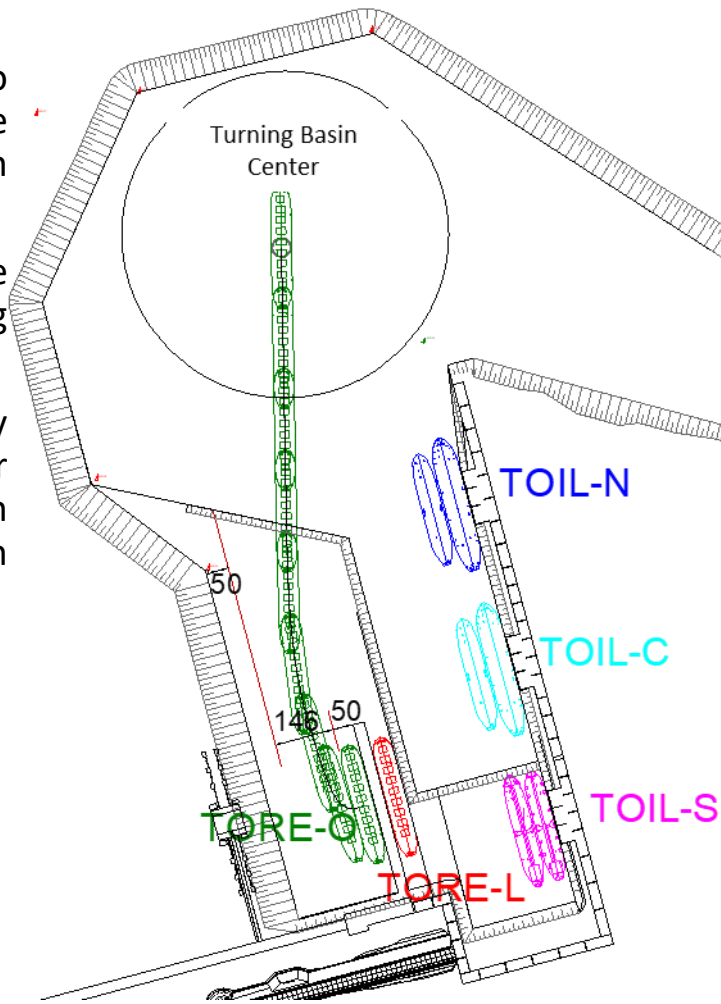
BERTHING AT T-ORE WEST

REFERENCE TRAJECTORIES

- After turning at the turning basin, the vessel may approach the berth going astern with initial heading of approximately 355°.
- May approach about one ship breadth of distance to the berth and adjust the heading and approach speed.

SPEEDS AND POINTS OF ATTENTION

- Recommended speed below 3 knots during the maneuver to reduce the passing ship effects.
- The wind coming from NE tends to increase the difficulty in the approach maneuver to align with the berth.
- Tugboats' activity tends to be more intense during the berthing process.
- Tugboats should predominantly operate in pushing mode under prevailing NE wind conditions, with a tendency for greater utilization of the tug located aft.



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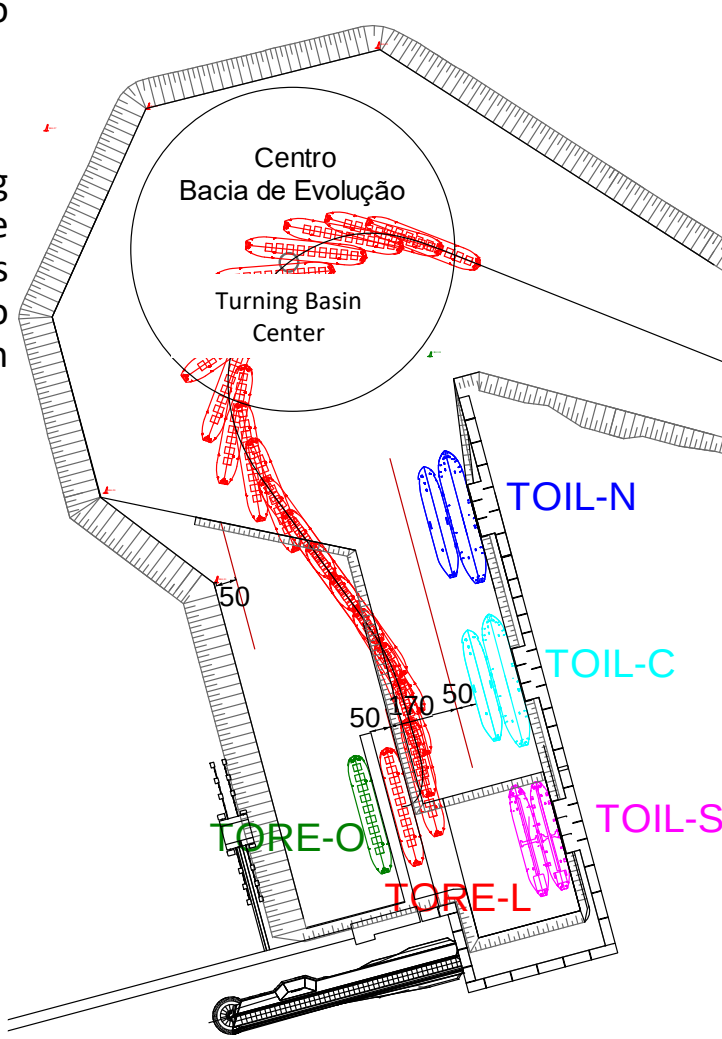
UNBERTHING T-ORE EAST

REFERENCE TRAJECTORIES

- The vessel may move away from the berth by one breadth of distance, head towards the turning basin with the assistance of tugs and execute the turn utilizing the basin area.
- After turning in the turning basin, the vessel may aim for an initial heading of approximately 105º and alignment with the center of the channel.

SPEEDS AND POINTS OF ATTENTION

- Recommended speed below 3 knots during the maneuver to reduce the passing ship effects.
- Especially for loaded ships exiting through the jetties, there may be difficulty to increase the speed, as NE winds and SW currents tend to push the vessel towards the green side.



UNBERTHING T-ORE WEST

REFERENCE TRAJECTORIES

- The vessel may move away from the berth by up to 2.5 breadths of distance before heading towards the basin.
- The available area of the basin should be utilized to execute the turn within it.
- After the turn in the turning basin, the vessel may aim for an initial heading of approximately 105° and alignment with the center of the channel.

SPEEDS AND POINTS OF ATTENTION

- Recommended speed below 3 knots during the maneuver to reduce the passing ship effects.
- Especially for loaded ships exiting through the jetties, there may be difficulty to increase the speed, as NE winds and SW currents tend to push the vessel towards the green side.